

Appl. No. : 10/566,286
Filed : January 27, 2006

REMARKS

In response to the final Office Action dated June 12, 2008, Applicant files Request for Continued Examination (RCE) along with this paper. As set forth above, Applicant has amended the application as set forth above. Specifically, Claim 3 has been canceled without prejudice. Claims 1 and 6 have been amended. Upon the entry of the amendments, Claims 1, 2, 5-9 are pending in this application. No new matter is added by the amendments as discussed below. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the above amendments and the following remarks.

Discussion of Amendments

Support for the amendments to Claims 1 and 6 can be found in, for example, original Claim 3 of the application. As such, Applicant respectfully submits that the amendments are fully supported by the application as originally filed and do not constitute the addition of new matter. Applicant respectfully requests the entry of the amendments.

Foreign Priority Claim and Submission of Priority Document

Applicant has noticed that the claim for foreign priority under 35 U.S.C. § 119 and the receipt of certified copy of the priority document from the International Bureau are not acknowledged on the summary page of the Office Action. The foreign priority claim was made in this application. Further, submission of certified copy of priority document is not required as this application was filed under 35 U.S.C. § 371. Applicant respectfully requests that acknowledgement of the priority claim and the receipt of the certified copy of the priority document from the International Bureau be made in the next Office Action or communication.

Discussion of Rejection Under 35 U.S.C. § 102

The Examiner rejected Claims 1-3, 5 and 9 under 35 U.S.C. § 102 (b) as being anticipated by Metchev (U.S. Patent No. 4,376,990). Applicant respectfully disagrees with the Examiner. Solely to expedite the prosecution of the application, however, Applicant has amended Claim 1 and cancelled Claim 3 without prejudice. Thus, the rejection of Claim 3 is moot. Applicant respectfully submits that Metchev does not anticipate Claims 1, 2, 5 and 9 as discussed below.

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Metchev Does Not Anticipate Claim 1

Claim 1 is directed to a distance measurement method using ultrasonic. The method of Claim 1 comprises:

- transmitting, from a transmitter, an ultrasonic pulse having specific frequencies;
- receiving, at a receiver, the ultrasonic pulse; and
- amplifying the ultrasonic pulse and extracting a specific frequency of the amplified ultrasonic pulse to find an arrival time of a pulse and converting the arrival time into a distance,

wherein the amplifying the ultrasonic pulse and extracting a specific frequency of the amplified ultrasonic pulse to find an arrival time of a pulse and converting the arrival time into a distance includes:

- amplifying the received ultrasonic pulse to generate an amplified signal;
- filtering the amplified signal to generate a filtered signal in which an unnecessary frequency of the amplified signal is removed or weakened;
- amplifying the filtered signal again to generate a re-amplified signal;
- converting the re-amplified signal into a digital signal; and
- extracting the specific frequency from the converted digital signal through a digital signal processing.

Metchev discloses a device for measuring a transmission time of electric, electromagnetic or acoustic signal. However, at minimum, Metchev does not disclose the claimed features of “amplifying the received ultrasonic pulse to generate an amplified signal; filtering the amplified signal to generate a filtered signal in which an unnecessary frequency of the amplified signal is removed or weakened; amplifying the filtered signal again to generate a re-amplified signal; converting the re-amplified signal into a digital signal; and extracting the specific frequency from the converted digital signal through a digital signal processing.” As Metchev does not disclose every element of Claim 1, the reference does not anticipate Claim 1 or its dependent claims, Claim 2, 5 and 9. Applicant respectfully requests that the anticipation rejection be withdrawn.

Discussion of Rejection Under 35 U.S.C. § 103

The Examiner rejected Claim 6 under 35 U.S.C. § 103 (a) as being unpatentable over Hayashi (U.S. Patent Application No. 2004/0021566 A1) in view of Metchev, and rejected Claims 7 and 8 under 35 U.S.C. § 103 (a) as being unpatentable over Hayashi in view of Hirose (U.S. Patent No. 6,672,162). Applicant respectfully disagrees with the Examiner. Solely to expedite the

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prosecution of the application, however, Applicant has amended Claim 6. Applicant respectfully submits that these claims are patentable over the cited references as set forth below.

Claim 6 Are Patentable over the Cited References

Claim 6 is directed to a distance measurement method using ultrasonic. The method of Claim 6 comprises:

- setting a first receiver for receiving an ultrasonic pulse at a known position;
 - setting a second receiver for receiving an ultrasonic pulse at an object to be measured;
 - transmitting an ultrasonic pulse having a specific frequency;
 - amplifying the ultrasonic pulse and extracting specific frequencies of the ultrasonic pulse received at the first receiver to find an arrival time of the ultrasonic pulse received at the first receiver and converting the arrival time into a distance;
 - transmitting error information related to a difference between the distance obtained based on the ultrasonic pulse received by the first receiver and the known distance to the second receiver; and
 - allowing the second receiver to correct the velocity of sound based on the error information,
- wherein the amplifying the ultrasonic pulse and extracting a specific frequency of the amplified ultrasonic pulse to find an arrival time of a pulse and converting the arrival time into a distance includes:
- amplifying the received ultrasonic pulse to generate an amplified signal;
 - filtering the amplified signal to generate a filtered signal in which an unnecessary frequency of the amplified signal is removed or weakened;
 - amplifying the filtered signal again to generate a re-amplified signal;
 - converting the re-amplified signal into a digital signal; and
 - extracting the specific frequency from the converted digital signal through a digital signal processing.

Hayashi discloses a locating system for determining the location of a transmitting station using electromagnetic waves or audible waves. Among features of Claim 6, however, Hayashi fails to teach the claimed features of amplifying the ultrasonic pulse and extracting specific frequencies of the ultrasonic pulse received at the first receiver to find an arrival time of the ultrasonic pulse received at the first receiver and converting the arrival time into a distance. Further, Hayashi fails to teach the claimed features of “amplifying the received ultrasonic pulse to generate an amplified signal; filtering the amplified signal to generate a filtered signal in which an unnecessary frequency of the amplified signal is removed or weakened; amplifying the filtered signal again to generate a re-amplified signal; converting the re-amplified signal into a

digital signal; and extracting the specific frequency from the converted digital signal through a digital signal processing.”

As discussed in the anticipation rejection, Metchev does not disclose the claimed features that Hayashi fails to teach, and thus, does not remedy the deficiencies of Hayashi. Further, to the best knowledge of Applicant, there is no additional reference or non-reference prior art to remedy the deficiencies of Hayashi and Metchev. There is no explanation as to why the differences between the cited references and Claim 6 would have been obvious to one of ordinary skill in the art. Thus, Claim 6 is patentable over the cited references.

Claim 7 Are Patentable over the Cited References

Claim 7 is directed to a distance measurement device using ultrasonic pulse. The device of Claim 7 comprises:

- a transmitter configured to generate and transmit an ultrasonic pulse having a specific frequency;
 - a sensor configured to receive the ultrasonic pulse;
 - an amplifier configured to amplify the ultrasonic pulse;
 - an analog filter configured to selectively attenuate other frequencies except for the specific frequency from the ultrasonic pulse amplified by the amplifier, to thereby generate an analog-filtered signal;
 - a secondary amplifier configured to amplify an analog-filtered signal selected through the analog filter;
 - an A/D converter configured to convert the amplified analog-filtered signal to a digital data;
 - a memory configured to store the digital data therein; and
 - a digital signal processor configured to process the digital data stored in the memory,
- wherein a transmission time of a first signal transmitted from the transmitter is received and a delayed time of the first signal is measured based on the transmission time and an arrival time of the first signal calculated in the digital signal processor.

The Office Action asserted that Hayashi teaches a transmission time of a first signal at paragraphs 193 and 194. Applicant respectfully disagrees. Referring to Claim 7’s recitation that a transmission time of a first signal transmitted from the transmitter is received, the claim term “transmission time” refers to the time at which the first signal is transmitted from the transmitter. Applicant notes that Hayashi uses the term “transmission time” in its paragraph 194. However, Hayashi uses this term to refer to the period or duration of time during which the signal is propagated. Specifically, Hayashi states “... based on the transmission time measured by the

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receiving station.” If the term transmission time in Hayashi were ever meant to refer to the time at which its signal is transmitted from the transmitting station, it would not have been measured by “the receiving station. Therefore, it would be inappropriate to interpret that term in Hayashi to mean the time at which its signal is transmitted from the transmitting station. Therefore, Hayashi fails to teach the claimed feature that a transmission time of a first signal transmitted from the transmitter is received. Further, Hayashi fails to teach the claimed features that a delayed time of the first signal is measured based on the transmission time and an arrival time of the first signal calculated in the digital signal processor.

Further, as admitted in the Office Action, Hayashi fails to teach the claimed feature of “a secondary amplifier configured to amplify an analog-filtered signal selected through the analog filter.” The Office Action asserted that Hirose’s elements 4d and 4f of Figure 1 teaches the secondary amplifier. However, a gate array 4d and a control unit 4f are not configured to amplify an analog-filtered signal. The Office Action further asserted that Hirose teaches that feature at column 3, line 66-column 4, line 6. However, the relevant discussion of Hirose does not disclose “secondary amplifier configured to amplify an analog-filtered signal selected through the analog filter”.

As such, Hayashi and Hirose in combination do not teach every limitation of Claim 7. Further, to the best knowledge of Applicant, there is no additional reference or non-reference prior art to remedy the deficiencies of Hayashi and Hirose. There is no sufficient explanation as to why the differences between the cited references and Claim 7 would have been obvious to one of ordinary skill in the art. Thus, Claim 7 and its dependent Claim 8 are patentable over the cited references.

Dependent Claims

Although Applicant has not addressed all the issues of the dependent claims, Applicant respectfully submits that Applicant does not necessarily agree with the characterization and assessments of the dependent claims made by the Examiner, and Applicant believes that each claim is patentable on its own merits. Applicant respectfully submits that pursuant to 35 U.S.C. § 112, ¶4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance.

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Therefore, Applicant respectfully requests the withdrawal of all claim rejections and prompts allowance of the claims.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

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CONCLUSION

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, arguments in support of the patentability of the pending claim set are presented above.

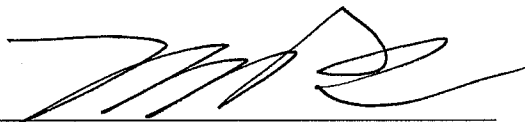
In light of the above remarks, reconsideration and withdrawal of the outstanding rejections is respectfully requested. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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